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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/694,323
Filing Date: October 27, 2003
Appellant(s): MEHRA, PANKAJ

Nick P. Patel
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 09 September 2009 appealing from the
Office action mailed 14 May 2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6907470	Sawada et al.	7-2001
20030046390	Ball et al.	10-2002
20020093954	Weil et al.	7-2001
7054951	Kao et al.	7-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-3, 7, 9-10 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawada et al. (US 6907470 B2) in view of Ball et al. (US 20030046390 A1) and in further view of Weil et al. (US 20020093954 A1).

Consider claim 1. Sawada et al. discloses a communication apparatus for routing or discarding a packet sent from a user terminal, comprising: a plurality of ports; a plurality of link up/down detection logic units, each link up/down detection logic unit associated with a port and configured to detect a change in the state of a link associated with the port (column 3 lines 8-12).

However, Sawada et al. fails to disclose a configuration validation checker coupled to each of the link up/down detection logic units, wherein the configuration validation checker receives topology information from an entity external to the switch and prevents said topology information from being used by the switch for routing purposes if the topology information fails to comport with local topology information stored in the switch.

Ball et al. discloses methods for construction multi-layer topological models of computer networks comprising a configuration validation checker coupled to each of the link up/down detection logic units (paragraphs 0020 and 0026); wherein the

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configuration validation checker receives topology information from an entity external to the switch and prevents said topology information from being used by the switch for routing purposes if the topology information fails to comport with local topology information stored in the switch ((“A virtual LAN (VLAN) is a logical Layer 2 broadcast domain, which enables a logical segmentation of the network without changing the physical connections. A VLAN enabled switch segments the connected stations into logically defined groups. Broadcast traffic from a server or an end-stations in a particular VLAN is replicated only on those ports connected to end-stations belonging to that VLAN. The broadcast traffic is blocked from ports with no end-points belonging to that VLAN, creating a similar type of broadcast containment that routers provide. VLANs may also be defined between different domains connected by a router. In this case, the router passes network traffic from one domain to the other (as done without defining a VLAN), and passes network traffic from one VLAN to the other. The router also passes network traffic between VLANs that are in the same domain because VLANs do not normally share user information. The router is configured as a member of all VLANs.”) Ball et al., paragraph 0020).

Therefore, it would have been obvious for a person of ordinary skill in the art at the time the invention was made to incorporate methods for construction multi-layer topological models of computer networks comprising a configuration validation checker coupled to each of the link up/down detection logic units wherein the configuration validation checker receives topology information from an entity external to the switch and prevents said topology information from being used by the switch for routing

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purposes if the topology information fails to comport with local topology information stored in the switch as taught by Ball et al. with a communication apparatus for routing or discarding a packet sent from a user terminal, comprising: a plurality of ports; a plurality of link up/down detection logic units, each link up/down detection logic unit associated with a port and configured to detect a change in the state of a link associated with the port as taught by Sawada et al. for the purpose of managing network topology changes.

However, Sawada et al., as modified by Ball et al., fails to disclose a configuration validation checker that causes a switch to change its routing behavior with regard to a port for which a link up/down detection unit has detected a state change.

Weil et al. discloses a method for failure protection in communication networks wherein a configuration validation checker causes a switch to change its routing behavior with regard to a port for which a link up/down detection unit has detected a state change ((When a router detects a change in the network topology, e.g. a link failure, node failure or an addition to the network, this information is communicated to its L3 peers within the routing domain. In link state routing protocols, such as OSPF and Integrated IS-IS, the information is typically carried in link state advertisements (LSAs) that are flooded` through the network (step 504). The information is used to create within the router a link state database (LSDB) which models the topology of the network in the routing domain. The flooding mechanism ensures that every node in the network is reached and that the same information is not sent over the same interface more than once. LSA's might be sent in a situation where the network topology is changing and

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they are processed in software. For this reason the time from the instant at which the first LSA resulting from a topology change is sent out until it reaches the last node might be in the order of a few seconds. However, this time delay does not pose a significant disadvantage as the network traffic is being maintained on the recovery paths during this time period.) paragraphs 0061-0062).

Therefore, it would have been obvious for a person of ordinary skill in the art at the time the invention was made to incorporate a method for failure protection in communication networks wherein a configuration validation checker causes a switch to change its routing behavior with regard to a port for which a link up/down detection unit has detected a state change as taught by Weil et al. with methods for construction multi-layer topological models of computer networks comprising a configuration validation checker coupled to each of the link up/down detection logic units and a communication apparatus for routing or discarding a packet sent from a user terminal, comprising: a plurality of ports; a plurality of link up/down detection logic units wherein the configuration validation checker receives topology information from an entity external to the switch and prevents said topology information from being used by the switch for routing purposes if the topology information fails to comport with local topology information stored in the switch, each link up/down detection logic unit associated with a port and configured to detect a change in the state of a link associated with the port as taught by Sawada et al., as modified by Ball et al., for the purpose of network configuration validation.

Consider claim 2, as applied to claim 1. Sawada et al., as modified by Ball et al. and Weil et al., further discloses the switch wherein each link up/down detection logic unit informs the configuration validation checker when a link to an associated port becomes non-functional, and the configuration validation checker responds by discarding all packets (Sawada et al., column 1 lines 65-67 and column 2 lines 1-21, and Weil et al., paragraph 0010).

Consider claim 3, as applied to claim 1. Sawada et al., as modified by Ball et al. and Weil et al., further discloses the switch wherein each link up/down detection logic unit informs the configuration validation checker when a link to an associated port becomes non-functional, and the configuration validation checker responds by discarding all packets destined to that link (Sawada et al., column 11 lines 33-48).

Consider claim 7. Sawada et al., as modified by Ball et al. and Weil et al., discloses a switch, comprising: a plurality of ports; a plurality of link up/down detection logic units, each link up/down detection logic unit (Ball et al., paragraphs 0020 and 0026) associated with a port and adapted to detect a change in the state of a link associated with the port (Sawada et al., column 3 lines 8-12); and means for causing the switch to change its routing behavior with regard to a port for which a link up/down detection unit has detected a state change (Weil et al., paragraphs 0061-0062); and means for receiving an indication from the link up/down detection logic units that a link to an associated port has become non-functional and means for ceasing routing of all

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packets (“When a router detects a change in the network topology, e.g. a link failure, node failure or an addition to the network, this information is communicated to its L3 peers within the routing domain. In link state routing protocols, such as OSPF and Integrated IS-IS, the information is typically carried in link state advertisements (LSAs) that are flooded` through the network (step 504). The information is used to create within the router a link state database (LSDB) which models the topology of the network in the routing domain. The flooding mechanism ensures that every node in the network is reached and that the same information is not sent over the same interface more than once.”) Weil et al., paragraph 0061).

Consider claim 9, as applied to claim 7. Sawada et al., as modified by Ball et al. and Weil et al., further discloses the switch including a means for receiving an indication from the link up/down detection logic units that a link to an associated port has become non-functional and a means for ceasing routing of all packets destined to that link (Sawada et al., column 11 lines 33-48).

Consider claim 10. Sawada et al., as modified by Ball et al. and Weil et al., discloses a network, comprising: a plurality of switches coupled together; at least one end node coupled to at least one switch; wherein at least one switch includes: a link up/down detection logic (Ball et al., paragraphs 0020 and 0026) unit associated with a port and configured to detect a change in the state of the link (Sawada et al., column 3 lines 8-12); and a configuration validation checker coupled to the link up/down detection

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logic unit, said configuration validation checker causes the switch to change its routing behavior with regard to the port if the link up/down detection unit has detected a state change (Weil et al., paragraphs 0061-0062); wherein the link up/down detection logic informs the configuration validation checker when said link becomes non-functional, and the configuration validation checker responds by rejecting all packets destined to said link (Weil et al. paragraphs 0057 and 0061).

Consider claim 13. Sawada et al., as modified by Ball et al. and Weil et al., discloses a method performed by a switch contained in a system, comprising: the switch monitoring a port for a link down event or a link up event, said link down event indicative of a link from the switch to an entity becoming non-functional and said link up event indicative of a newly established link from the switch to said entity; the switch detecting a link down event associated with said switch or a link up event associated with said switch receiving a packet into said switch (Sawada et al., column 3 lines 8-12); the switch determining if said packet is to be routed out through said port associated with the detected link down event or link up event (Ball et al., paragraph 0026); if the switch determines that the packet is to be routed out through said port associated with a detected link down event, the switch discarding the packet and if the switch determines that the packet is to be routed out through said port associated with a detected link up event, the switch routing the packet through said port (Weil et al., paragraphs 0061-0062).

Consider claim 14, as applied to claim 13. Sawada et al., as modified by Ball et al. and Weil et al., further discloses the method including if the switch determines that the packet is to be routed out through said port associated with a detected link down event, discarding all packets received by the switch (Sawada et al., column 11 lines 33-48).

Consider claim 15, as applied to claim 13. Sawada et al., as modified by Ball et al. and Weil et al., further discloses the method including requesting the entity to provide a unique identifier to the switch (Ball et al., paragraph 0075).

Consider claim 16, as applied to claim 15. Sawada et al., as modified by Ball et al. and Weil et al., further discloses the method including the switch receiving a unique identifier from the entity, comparing the unique identifier received from the entity to state information contained in the switch and, if the unique identifier from the entity does not match a value in the state information, discarding a packet destined for the entity ((“When a node receives new topology information it updates its LSDB (link state database) and starts the process of recalculating the forwarding table (step 505). To reduce the computational load, a router may choose to postpone recalculation of the forwarding table until it receives a specified number of updates (typically more than one), or if no more updates are received after a specified timeout. After the LSAs (link state advertisements) resulting from a change are fully flooded, the LSDB is the same at

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every node in the network, but the resulting forwarding table is unique to the node.”)

Weil et al., paragraph 0065).

Consider claim 17, as applied to claim 16. Sawada et al., as modified by Ball et al. and Weil et al., further discloses the method including if the unique identifier from the entity matches a value in the state information, permitting packets destined for the entity to be routed from the switch to the entity (Ball et al. paragraphs 0062 and 0113).

Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawada et al. (US 6907470 B2) in view of Ball et al. (US 20030046390 A1) in further view of Weil et al. (US 20020093954 A1) and in further view of Kao et al. (US 7054951 B1).

Consider claim 4, as applied to claim 1. Sawada et al., as modified by Ball et al. and Weil et al., discloses a configuration validation checker responding to a non-functional link. However, Sawada et al., as modified by Ball et al. and Weil et al., fails to disclose a configuration validation checker responding to a non-functional link notification by: receiving an identifier value from an entity coupled to the switch via the functional link; comparing the identifier value received from the entity with topology information contained in the switch; and if the identifier value matches a value in the

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topology information, permitting the switch to route packets over the functional link; or if the identifier value does not match a value in the topology information, discarding all packets targeting the functional link. Kao et al. discloses plug and play node addition in a dual ring topology network using locally significant ring identifiers for determining routing decisions wherein a check is made to determine if the topology packet was generated by the receiving node and, if so, then the topology information is evaluated and stored/updated in the topology table and, if not, then a check is made to determine if the ring identifier associated with the topology discovery packet matches the ring identifier associated with the ring on which the packet was received ((“When a topology discovery packet is received (376), a check is made to determine if the topology packet was generated by the receiving node (378). If so, then the topology information is evaluated (380) and stored/updated in the topology table as appropriate (382). More specifically, entries in the topology table can be added or entries updated based on the received topology information. If the topology packet was not generated by the receiving node, then a check is made to determine if the ring identifier for the node has local significance only (384). If not, then a check is made to determine if the ring identifier associated with the topology discovery packet matches the ring identifier associated with the ring on which the packet was received (386). If no match arises, then the packet is forwarded without appending any information relating to the receiving node to the topology discovery packet (388) and thereafter the process can continue at step 376. If the ring identifier matches, then the address for the receiving node is appended to the topology packet, and as appropriate, the ring identifier associated with the ring on

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which the packet was received is appended to the topology packet as well (390).

Thereafter, the packet is forwarded at step 388.”) column 13 lines 51-67 and column 14 lines 1-5) and packets are discarded if an address does not match an identifier (column 12 lines 27-39).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate plug and play node addition in a dual ring topology network using locally significant ring identifiers for determining routing decisions wherein a check is made to determine if the topology packet was generated by the receiving node and, if so, then the topology information is evaluated and stored/updated in the topology table and, if not, then a check is made to determine if the ring identifier associated with the topology discovery packet matches the ring identifier associated with the ring on which the packet was received and packets are discarded if an address does not match an identifier as taught by Kao et al. with a configuration validation checker responding to a non-functional link as taught by Sawada et al., as modified by Ball et al. and Weil et al., for the purpose of effectively routing packets.

Consider claim 11, as applied to claim 10. Sawada et al., as modified by Ball et al., Weil et al. and Kao et al., further discloses the network wherein the link up/down detection logic unit informs the configuration validation checker when the link becomes non-functional, and the configuration validation checker responds by rejecting all packets (Sawada et al., column 1 lines 65-67 and column 2 lines 1-21).

(10) Response to Argument

Appellant's arguments: pages 12-16 of the Appeal Brief

Applicant argues that Sawada et al., as modified by Ball et al. and Weil et al., fails to disclose the claimed elements of "wherein the configuration validation checker receives topology information from an entity external to the switch and prevents said topology information from being used by the switch for routing purposes if the topology information fails to comport with local topology information stored in the switch." in Claim 1.

Examiner respectfully disagrees. Paragraph 0058 of the Ball et al. references teaches algorithms for detecting a change in network topology. This reads on the Claimed configuration validation checker receiving topology information from an external source. Paragraph 0114 of the Ball et al. reference teaches a spanning tree discovery process wherein discovered SpanTreeLink models are saved in a list, checked for border associations, and destroyed if there are any left over. This reads on the Claimed failing to comport.

Applicant argues that Sawada et al., as modified by Ball et al., Weil et al. and Kao et al., fails to disclose the claimed elements of discarding all packets "if the identifier value does not match a value in the topology information." in Claim 4.

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Examiner respectfully disagrees. Paragraph 0058 of the Ball et al. references teaches algorithms for detecting a change in network topology. This reads on the Claimed configuration validation checker receiving topology information from an external source. Paragraphs 0067-0068 of the Weil et al. reference teaches a method of dropping packets if it is determined that a link becomes congested. This reads on the Claimed dropping of packets. Column 12 lines 27-38 of the Kao et al. reference teach a method wherein ring identifiers for determining routing decisions check to determine if a topology packet was generated by the certain node, and packets are discarded if an address does not match an identifier. This reads on the Claimed matching of an identifier value.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Mark D Fearer/

Examiner, Art Unit 2443

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